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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,358	05/13/2002	Horst Berneth	Mo-7059/LcA 33,071	1359
157	7590	12/01/2006	EXAMINER	
BAYER MATERIAL SCIENCE LLC			ANGEBRANNDT, MARTIN J	
100 BAYER ROAD			ART UNIT	
PITTSBURGH, PA 15205			PAPER NUMBER	
			1756	

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/089,358

**Applicant(s)**

BERNETH ET AL.

**Examiner**

Martin J. Angebrannt

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 9/18/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-24 and 27-29 is/are pending in the application.
- 4a) Of the above claim(s) 19-24, 27 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-18 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-5, 7-24 and 27-29 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

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1. The response of the applicant has been read and given careful consideration. Rejections of the previous office action, not repeated below are withdrawn. Responses to the arguments appear after the first rejection to which they are directed.

2. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

I. Claims 1-18 and 29, drawn to optical recording media and use thereof.

II. Claims 19-23 and 27-28, drawn to various azo based monomers and polymerization thereof.

III. Claim 24, drawn to azo based polymer compositions.

3. The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The claims fail to make a contribution beyond that of the prior art as evidenced by the references marked "X" or "Y" in the PCT search report of December 14, 2000. In particular any feature which unites them fails to confer patentability.

4. During a telephone conversation with Aaron Pries on March 7, 2006 a provisional election was made with traverse to prosecute the invention of group I, claims 1-18 and 29.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 19-28 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

**The applicant is requested to acknowledge the election in the next communication.**

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-5,7-18 and 29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification on page 45 describes  $100 \text{ J/cm}^2$ , not  $100 \text{ mJ/cm}^2$ . Were this to be corrected a number of the rejections set forth in the previous office action would be reinstated.

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1,2,4,7-13,15,17 and 29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Berneth et al. WO/ 9744365. (Berneth et al. '799 is the English equivalent)

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Berneth et al. WO/ 9744365 teaches the use of laser powers of  $10^3$  to  $10^7$  mJ/m<sup>2</sup> (0.1-1,000 mJ/cm<sup>2</sup>) with times of  $10^{-15}$  to  $10^{-3}$  second for writing patterns using polarized light. (page 5/lines 4-15). The spot sizes may be 10 nm to 20 microns (page 5/lines 17-19). Examples of useful dye include those disclosed on pages 6-20, which are pendent to the polymer backbone. Exemplified dyes are shown in the examples. The thickness of the layers may be 0.1-500 microns ([page 23/lines 24+). The use of these in holographic, analog or digital recording processes is disclosed. (24/26-25/20). The examples 41.2 – 41.4, 42.3 and 42.4 use powers of 60 mW/cm<sup>2</sup> with layer thicknesses of 0.9 microns and a linearly polarized 514.5 nm Ar ion laser and the laser spot size is 7-8 microns (page 28/line 24). The power applied is not discussed. The examples which use a maximum of 280 mW/cm<sup>2</sup> use 130-660 mJ/cm<sup>2</sup> (see tables).

It is not clear what power density in mJ/cm<sup>2</sup> was used in the cited examples. There are inventors in common and the applicant is invited to clarify the record with a declaration from the inventors as to this fact. The examiner holds that either the power used was in the recited range, thereby anticipating the claimed invention, or alternatively, it would have been obvious to one skilled in the art to modify the cited examples by using power densities within the 10-100 mJ/cm<sup>2</sup> range based upon the direction to  $10^5$ - $10^6$  mJ/m<sup>2</sup> within the reference.

The applicant argues that the presence of azo moieties is prohibited. The examiner notes that at least one of X<sup>2'</sup> and X<sup>3'</sup> must be -N=N- as set forth on page 4 of the response. Further, the applied examples of the reference describes a co-polymer including azo and non-azo pendant mesogenic groups. Therefore the claims are met.

10. Claims 1-4,7-13,15-18 and 29 are rejected under 35 U.S.C. 103(a) as obvious over Berneth et al. WO/ 9744365, in view of Elmasry '819 and Savant et al. '221.

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Elmasry '819 in example 9 has a glass substrate coated with aluminum and a polymeric azo dye having the structure shown is coated to a thickness of 0.15 microns. This is exposed to a laser modulated by an acousto-optic modulator.

Savant et al. '221 in examples XIII-XX has a glass substrate and a polymeric azo dye coated to a thickness between 20- and 35 microns. This is exposed to a laser modulated by an electro-optic modulator which varies the polarization and is readout using polarized light and detecting the polarization of the reflected light.

It would have been obvious to one skilled in the art to one skilled in the art to modify the cited example of Berneth et al. WO/ 9744365 by adding a reflective layer as taught by Elmasry '819 and Savant et al. '221 and further to use modulation means, such as the acousto-optic modulator taught by Elmasry '819, in place of the EOM with a reasonable expectation of being able to record data and read it out using the polarization as discussed by Berneth et al. WO/ 9744365 and Savant et al. '221.

The examiner relies upon the response above to address the arguments.

11. Claims 1-5,7-18 and 29 are rejected under 35 U.S.C. 103(a) as obvious over Berneth et al. WO/ 9744365, in view of Elmasry '819 and Savant et al. '221, further in view of Ninomiya et al. '092 or Akashi et al. EP 669548.

Ninomiya et al. '092 teach LC recording layers provided on polymeric substrates (12/35-41). The overcoating of the LC polymers layer with a surface protective layer is disclosed to provide resistance to damage from abrasion, heat and the like (12/60-65). Useful materials for the surface protective layer include UV curable resins and the like including various acrylates (13/1-58).

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Akashi et al. EP 669548 teaches in example 1, an LC materials applied to an Al coated polyethylene substrate and overcoated with a UV curable layer. (pages 11-12.) The use of azo dyes is disclosed with respect to the formulae a-k and the fact that X and Y may be N=N as discussed in page 5. The use of azobenzene is also specifically described. On page 4 at line 26. Useful protective layers are described. (9/6-9).

It would have been obvious to one skilled in the art to modify the media rendered obvious by the combination of Berneth et al. WO/ 9744365 with Elmasry '819 and Savant et al. '221 by adding a protective layer know to be useful with LC materials, such as those disclosed by Akashi et al. EP 669548 or Ninomiya et al. '092 with a reasonable expectation of forming a useful azo based LC recording medium which is protected from mechanical damage. Further it would have been obvious to use other substrate materials, such as the polymers disclosed by Ninomiya et al. '092 or Akashi et al. EP 669548, in place of the glass substrate exemplified by Berneth et al. WO/ 9744365 with Elmasry '819 and Savant et al. '221 with a reasonable expectation of success based upon the disclosure of equivalent functionality.

The examiner relies upon the response above to address the arguments.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

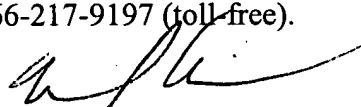
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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J. Angebranndt  
Primary Examiner  
Art Unit 1756

11/26/2006